

WHAT IS CLAIMED IS:

1. *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said isolated *E. coli* do not contain any detectable levels of bacteriophage genetic material from at least one bacteriophage or in the alternative are resistant to infection by one or more bacteriophage types.
2. *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* do not contain any detectable genetic material of bacteriophage Wphi.
3. *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* do not contain any detectable genetic material of bacteriophage Mu.
4. The *E. coli* of claim 2, wherein said *E. coli* additionally do not contain any detectable genetic material of one or more bacteriophage types selected from the group consisting of Mu, T1, T2, T3, T4, T5, T6 and T7.
5. The *E. coli* of claim 1, wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.
6. The *E. coli* of claim 2, wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.
7. The *E. coli* of claim 3, wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.
8. The *E. coli* of claim 1, wherein said *E. coli* contain one or more genotype markers selected from the group consisting of: *recA*<sup>-</sup>, *lacZ*<sup>-</sup>,  $\Delta lon$ ,

*ompT*<sup>-</sup>, *endA1*, *rnaE*<sup>-</sup>, *rnaI*<sup>-</sup>, *hsdR17*(*r<sub>K</sub>*<sup>-</sup>, *m<sub>K</sub>*<sup>+</sup>), *hsdS20*(*r<sub>B</sub>*<sup>-</sup>, *m<sub>B</sub>*<sup>+</sup>), *mcrA*, *mcrB*, *mrr*, *deoR*, *supE* and *supF*.

9. The *E. coli* of claim 1, wherein said *E. coli* contain one or more genotype markers selected from the group consisting of: *recA1*, *recA13*,  $\Delta$ *recA*, *lacX74*, and *lacZ* $\Delta$ M15.

10. The *E. coli* of claim 1, wherein said *E. coli* contain an F' episome or portions thereof.

11. The *E. coli* of claim 1, wherein said *E. coli* have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

12. The *E. coli* of claim 1, wherein said *E. coli* have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

13. The isolated *E. coli* of claim 1, wherein said *E. coli* have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

14. The *E. coli* of claim 1, wherein said *E. coli* are *E. coli* strain W or strain C.

15. A method of cloning comprising:

- (a) obtaining competent *E. coli*;
- (b) transforming said competent *E. coli* with at least one vector;
- (c) selecting transformed *E. coli* containing said at least one vector;
- and
- (d) culturing said transformed *E. coli*;

wherein said *E. coli* have a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, and wherein said *E. coli* do not contain any

detectable levels of bacteriophage genetic material from at least one bacteriophage or in the alternative are resistant to infection by one or more bacteriophage types..

16. The method of claim 15 wherein said *E. coli* do not contain any detectable levels of genetic material of bacteriophage Wphi.

17. The method of claim 15 wherein said *E. coli* do not contain any detectable levels of genetic material of bacteriophage Mu.

18. The method of claim 15, wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.

19. The method of claim 15, further comprising isolating said at least one vector from said transformed *E. coli*.

20. The method of claim 15, wherein the temperature at which said transformed *E. coli* are cultured is greater than 37°C.

21. The method of claim 20, wherein the temperature at which said transformed *E. coli* are cultured is about 42°C.

22. The method of claim 15, wherein said *E. coli* have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

23. The method of claim 15, wherein said *E. coli* have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

24. The method of claim 15, wherein said *E. coli* have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

25. The method of claim 15, wherein said *E. coli* are *E. coli* strain W or strain C.

26. The method of claim 15 wherein said *E. coli* is JDP674 or derivatives thereof.

27. A method of producing a protein or peptide, said method comprising:

- (a) obtaining competent *E. coli*;
- (b) transforming into said competent *E. coli* a vector containing a gene encoding a protein or peptide; and
- (c) culturing said transformed *E. coli* under conditions that cause said transformed *E. coli* to produce said protein or peptide;

wherein said *E. coli* have a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, and wherein said *E. coli* do not contain any detectable levels of bacteriophage genetic material from at least one bacteriophage or in the alternative are resistant to infection by one or more bacteriophage types.

28. The method of claim 27 wherein said *E. coli* do not contain any detectable levels of genetic material of bacteriophage Wphi.

29. The method of claim 27 wherein said *E. coli* do not contain any detectable levels of genetic material of bacteriophage Mu.

30. The method of claim 27, wherein said *E. coli* lack any detectable levels of at least one endogenous plasmid.

31. The method of claim 27, wherein said *E. coli* have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

32. The method of claim 27, wherein said *E. coli* have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

33. The method of claim 27, wherein said *E. coli* have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

34. The method of claim 27, wherein said *E. coli* are strain W or strain C.

35. The method of claim 27 wherein said *E. coli* is JDP674 or derivatives thereof.

36. A method of transforming *E. coli*, said method comprising:

- (a) obtaining competent *E. coli*;
- (b) incubating said *E. coli* in the presence of one or more vectors under conditions which cause said one or more vectors to be taken up by said *E. coli*; and
- (c) culturing said *E. coli*;

wherein said *E. coli* have a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, and wherein said *E. coli* do not contain any detectable levels of bacteriophage genetic material from at least one bacteriophage or in the alternative are resistant to infection by one or more bacteriophage types.

37. The method of claim 36 wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Wphi.

38. The method of claim 36 wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Mu.

39. The method of claim 36, wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.

40. The method of claim 36, wherein said *E. coli* have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

41. The method of claim 36, wherein said *E. coli* have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

42. The method of claim 36, wherein said *E. coli* have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

43. The method of claim 36, wherein said *E. coli* are strain W or strain C.

44. The method of claim 36 wherein said *E. coli* is JDP674 or derivatives thereof.

45. A method of producing *E. coli* for cloning, said method comprising:

- (a) obtaining *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294; and
- (b) introducing into said *E. coli* a mutation that renders said *E. coli* resistant to infection by one or more bacteriophage types.

46. The method of claim 45, further comprising curing said *E. coli* of endogenous plasmids.

47. The method of claim 45, wherein said *E. coli* have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

48. The method of claim 45, wherein said *E. coli* have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

49. The method of claim 45, wherein said *E. coli* have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

50. The method of claim 45, wherein said *E. coli* are strain W or strain C.

51. The method of claim 45 wherein said *E. coli* is JDP674 or derivatives thereof.

52. A method of producing *E. coli* for cloning, said method comprising:

- (a) obtaining *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* contain bacteriophage; and
- (b) curing said *E. coli* of bacteriophage.

53. A method of producing *E. coli* for cloning, said method comprising:

- (a) obtaining *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* contain bacteriophage Wphi; and
- (b) curing said *E. coli* of bacteriophage Wphi.

54. A method of producing *E. coli* for cloning, said method comprising:

- (a) obtaining *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* contain bacteriophage Mu; and
- (b) curing said *E. coli* of bacteriophage Mu.

55. The method of claim 52, further comprising curing said *E. coli* of endogenous plasmids.

56. The method of claim 52, further comprising introducing into said *E. coli* a mutation that renders said *E. coli* resistant to infection by one or more bacteriophage types.

57. The method of claim 52, wherein said *E. coli* have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

58. The method of claim 52 wherein said *E. coli* have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

59. The method of claim 52, wherein said *E. coli* have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

60. The method of claim 52, wherein said *E. coli* are strain W or strain C.

61. The method of claim 52 wherein said *E. coli* is JDP674 or derivatives thereof.

62. A kit for cloning comprising a container containing *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* do not contain detectable levels of bacteriophage genetic material from at least one bacteriophage or in the alternative are resistant to infection by one or more bacteriophages.

63. The kit of claim 62 wherein said *E. coli* is JDP674 or derivatives thereof.

64. A kit for cloning comprising a container containing *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli*



MM294, wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Wphi.

65. A kit for cloning comprising a container containing *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Mu.

66. The kit of claim 62, wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.

67. The kit of claim 62, further comprising one or more vector.

68. The kit of claim 66, further comprising at least one component selected from the group consisting of one or more restriction enzyme, one or more ligase enzyme, and one or more DNA polymerase.

69. The kit of claim 67, further comprising a container containing at least one recombination protein.

70. The kit of claim 62, wherein said *E. coli* contained within said kit are competent.

71. The kit of claim 70, wherein said *E. coli* contained within said kit are chemically competent.

72. The kit of claim 70, wherein said *E. coli* contained within said kit are electrocompetent.

73. The kit of claim 62, wherein said *E. coli* contained within said kit have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

74. The kit of claim 62, wherein said *E. coli* contained within said kit have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

75. The kit of claim 62, wherein said *E. coli* contained within said kit have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

76. The kit of claim 62, wherein said *E. coli* contained within said kit are strain W or strain C.

77. A composition comprising *E. coli*, wherein the *E. coli* of said composition have a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, and wherein said *E. coli* do not contain detectable levels of bacteriophage genetic material from at least one bacteriophage or in the alternative is resistant to infection by one or more bacteriophage types.

78. The composition of claim 77 wherein said *E. coli* is JDP674 or derivatives thereof.

79. A composition comprising *E. coli*, wherein the *E. coli* of said composition have a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, and wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Wphi.

80. A composition comprising *E. coli*, wherein the *E. coli* of said composition have a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, and wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Mu.

81. The composition of claim 77, wherein the *E. coli* of said composition lack detectable levels of at least one endogenous plasmid.

82. The composition of claim 77, further comprising a component selected from the group consisting of a glycerol solution and a competence buffer.

83. The composition of claim 77, further comprising at least one component selected from the group consisting of one or more DNA fragment, one or more ligase enzyme, one or more vector, one or more buffering salts, and one or more recombination protein.

84. The composition of claim 77, wherein the *E. coli* of said composition have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

85. The composition of claim 77, wherein the *E. coli* of said composition have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

86. The composition of claim 77, wherein the *E. coli* of said composition have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

87. The composition of claim 77, wherein the *E. coli* of said composition are *E. coli* strain W or strain C.

88. A method of making competent *E. coli*, said method comprising:

- (a) obtaining *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* do not contain detectable levels of bacteriophage genetic material from at

least one bacteriophage or in the alternative are resistant to infection by one or more bacteriophage types; and

(b) treating said *E. coli* to make it competent.

89. The method of claim 88 wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Wphi.

90. The method of claim 88 wherein said *E. coli* do not contain detectable levels of genetic material of bacteriophage Mu.

91. The method of claim 88, wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.

92. The method of claim 88, wherein said *E. coli* have a growth rate that is at least 25% greater than the growth rate of *E. coli* MM294.

93. The method of claim 88, wherein said *E. coli* have a growth rate that is at least 50% greater than the growth rate of *E. coli* MM294.

94. The method of claim 88, wherein said *E. coli* have a growth rate that is at least 100% greater than the growth rate of *E. coli* MM294.

95. The method of claim 88, wherein said *E. coli* are *E. coli* strain W or strain C.

96. The method of claim 88 wherein said *E. coli* is JDP674 or derivatives thereof.

97. Competent *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294 wherein said *E. coli* do not contain detectable levels of bacteriophage genetic material of at least one

bacteriophage or in the alternative are resistant to infection by one or more bacteriophage types.

98. A method for selecting for *E. coli* that contain a plasmid of interest, said method comprising:

- (a) obtaining *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said *E. coli* are unable to synthesize a cell membrane component thereby rendering said *E. coli* unable to grow in media lacking said cell membrane component;
- (b) transforming said *E. coli* with a plasmid, wherein said plasmid encodes a gene product that restores the ability of said *E. coli* to grow in media lacking said cell membrane component; and
- (c) culturing said transformed *E. coli* in medium lacking said cell membrane component.

99. The method of claim 98, wherein said cell membrane component is diaminopimelic acid.

100. The method of claim 99, wherein said *E. coli* are *dap*<sup>-</sup>.

101. The method of claim 99, wherein said gene product is diaminopimelic acid.

102. The method of claim 98, wherein said *E. coli* do not contain detectable levels of bacteriophage genetic material from at least one bacteriophage or in the alternative are resistant to one or more bacteriophage types.

103. The method of claim 98, wherein said *E.* do not contain detectable levels of genetic material of bacteriophage Wphi.

104. The method of claim 98, wherein said *E.* do not contain detectable levels of genetic material of bacteriophage Mu.

105. The method of claim 98 wherein said *E. coli* lack detectable levels of at least one endogenous plasmid.

106. The *E. coli* W derivative designated JDP674 and derivatives thereof.

107. The *E. coli* W derivative designated JDP674.